

## **RAW SEQUENCE LISTING**

**The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.**

Application Serial Number: 10/535,667  
Source: 1FW9  
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# ***ENTERED***



IFWO

## RAW SEQUENCE LISTING

DATE: 03/06/2006

PATENT APPLICATION: US/10/535,667

TIME: 12:01:48

Input Set : A:\PTO.TS.txt

Output Set: N:\CRF4\03062006\J535667.raw

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3 <110> APPLICANT: IMAMURA, Hiromi
4     YOSHIDA, Masasuke
5     YOKOYAMA, Ken
7 <120> TITLE OF INVENTION: A Rotary Motor molecule V1-ATPase
9 <130> FILE REFERENCE: 2005_0822A/WMC/00653
11 <140> CURRENT APPLICATION NUMBER: US 10/535,667
12 <141> CURRENT FILING DATE: 2005-05-19
14 <150> PRIOR APPLICATION NUMBER: JP2002-337212
15 <151> PRIOR FILING DATE: 2002-11-20
17 <150> PRIOR APPLICATION NUMBER: PCT/JP2003/012983
18 <151> PRIOR FILING DATE: 2003-10-09
20 <160> NUMBER OF SEQ ID NOS: 5
22 <170> SOFTWARE: PatentIn Ver. 2.1
24 <210> SEQ ID NO: 1
25 <211> LENGTH: 4199
26 <212> TYPE: DNA
27 <213> ORGANISM: Thermus thermophilus
29 <220> FEATURE:
30 <221> NAME/KEY: CDS
31 <222> LOCATION: (1)..(318)
33 <220> FEATURE:
34 <221> NAME/KEY: CDS
35 <222> LOCATION: (334)..(2067)
37 <220> FEATURE:
38 <221> NAME/KEY: CDS
39 <222> LOCATION: (2081)..(3514)
41 <220> FEATURE:
42 <221> NAME/KEY: CDS
43 <222> LOCATION: (3528)..(4196)
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47 Val Arg Met Ala Val Ile Ala Asp Pro Glu Thr Ala Gln Gly Phe Arg
48   1           5           10           15
50 ctc gcg ggc ctc gag ggc tac ggg gcc tct tcg gcg gag gag gcc caa      96
51 Leu Ala Gly Leu Glu Gly Tyr Gly Ala Ser Ser Ala Glu Glu Ala Gln
52           20           25           30
54 agc ctc ctg gaa acc ctc gtg gag cgg ggc ggc tac gcc ctg gtg gcc      144
55 Ser Leu Leu Glu Thr Leu Val Glu Arg Gly Gly Tyr Ala Leu Val Ala
56           35           40           45
58 gtg gac gag gcg ctc ctc ccc gac ccc gag cgg gcg gtg gag cgc ctc      192
59 Val Asp Glu Ala Leu Leu Pro Asp Pro Glu Arg Ala Val Glu Arg Leu
60           50           55           60
62 atg cgg ggc agg gac ctc ccc gtg ctc ctg ccc atc gcg ggg ctg aag      240

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63 Met Arg Gly Arg Asp Leu Pro Val Leu Leu Pro Ile Ala Gly Leu Lys
64 65 70 75 80
66 gag gcc ttc cag ggg cac gac gtg gaa ggc tac atg cgg gag ctg gtg 288
67 Glu Ala Phe Gln Gly His Asp Val Glu Gly Tyr Met Arg Glu Leu Val
68 85 90 95
70 agg aag acc atc ggc ttt gac atc aag ctg tagaatggag ggacg atg atc 339
71 Arg Lys Thr Ile Gly Phe Asp Ile Lys Leu Met Ile
72 100 105
74 caa ggg gtg atc cag aag atc gcg ggc ccg gcg gtg atc gcc aag ggc 387
75 Gln Gly Val Ile Gln Lys Ile Ala Gly Pro Ala Val Ile Ala Lys Gly
76 110 115 120
78 atg ctc ggg gcc cgc atg tac gac atc tgc aag gtg ggc gaa gag ggc 435
79 Met Leu Gly Ala Arg Met Tyr Asp Ile Cys Lys Val Gly Glu Glu Gly
80 125 130 135 140
82 ctc gtg ggc gag atc atc cgc ctg gac ggg gac acg gcc ttc gtc cag 483
83 Leu Val Gly Glu Ile Ile Arg Leu Asp Gly Asp Thr Ala Phe Val Gln
84 145 150 155
86 gtc tac gag gac acc tcg ggc cta aag gtg ggg gag ccc gtg gtc tcc 531
87 Val Tyr Glu Asp Thr Ser Gly Leu Lys Val Gly Glu Pro Val Val Ser
88 160 165 170
90 acg ggg ctt ccc ttg gcg gtg gag ctc ggc ccc ggg atg ctg aac ggc 579
91 Thr Gly Leu Pro Leu Ala Val Glu Leu Gly Pro Gly Met Leu Asn Gly
92 175 180 185
94 atc tac gac ggc atc cag cgc ccc ctg gag cgc atc cgg gag aag acg 627
95 Ile Tyr Asp Gly Ile Gln Arg Pro Leu Glu Arg Ile Arg Glu Lys Thr
96 190 195 200
98 ggg atc tac atc acc cgg ggc gtg gtg gtc cac gcc ctg gac cgg gag 675
99 Gly Ile Tyr Ile Thr Arg Gly Val Val Val His Ala Leu Asp Arg Glu
100 205 210 215 220
102 aag aag tgg gcc tgg acg ccc atg gtc aag ccc ggg gac gag gtg cgg 723
103 Lys Lys Trp Ala Trp Thr Pro Met Val Lys Pro Gly Asp Glu Val Arg
104 225 230 235
106 ggg ggt atg gtc ctg ggc acg gtg ccc gag ttc ggc ttc acc cac aag 771
107 Gly Gly Met Val Leu Gly Thr Val Pro Glu Phe Gly Phe Thr His Lys
108 240 245 250
110 atc ctg gta ccc ccg gac gtg cgg ggc cgg gtc aag gag gtg aag ccc 819
111 Ile Leu Val Pro Pro Asp Val Arg Gly Arg Val Lys Glu Val Lys Pro
112 255 260 265
114 gcc ggg gag tac acc gtg gag gag ccg gtg gtg gtc ctc gag gac ggc 867
115 Ala Gly Glu Tyr Thr Val Glu Glu Pro Val Val Val Leu Glu Asp Gly
116 270 275 280
118 acc gag ctc aag atg tac cac acc tgg ccc gtt cgc cgg gcg agg ccc 915
119 Thr Glu Leu Lys Met Tyr His Thr Trp Pro Val Arg Arg Ala Arg Pro
120 285 290 295 300
122 gtg caa agg aag ctt gac ccc aac acc ccc ttc ctc acg ggg atg cgc 963
123 Val Gln Arg Lys Leu Asp Pro Asn Thr Pro Phe Leu Thr Gly Met Arg
124 305 310 315
126 atc ctg gac gtc ctc ttc ccc gtg gcc atg ggg ggc acc gcc gcc atc 1011
127 Ile Leu Asp Val Leu Phe Pro Val Ala Met Gly Gly Thr Ala Ala Ile

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128		320		325		330		
130	cct ggg ccc ttc ggc agc ggc aag acc gtg acc cag cag tcc ctg gcc							1059
131	Pro Gly Pro Phe Gly Ser Gly Lys Thr Val Thr Gln Gln Ser Leu Ala							
132		335		340		345		
134	aag tgg tcc aac gcc gac gtg gtg gtc tac gtg ggc tgc ggg gag cgg							1107
135	Lys Trp Ser Asn Ala Asp Val Val Val Tyr Val Gly Cys Gly Glu Arg							
136		350		355		360		
138	ggg aac gag atg acc gac gtg ctc gtg gag ttc ccc gag ctc acc gac							1155
139	Gly Asn Glu Met Thr Asp Val Leu Val Glu Phe Pro Glu Leu Thr Asp							
140	365		370		375		380	
142	ccc aag acg ggg ggg ccc ttg atg cac cgc acc gtc ctc atc gcc aac							1203
143	Pro Lys Thr Gly Gly Pro Leu Met His Arg Thr Val Leu Ile Ala Asn							
144		385		390		395		
146	acc tcc aac atg ccc gtg gcc gcc cgc gag gcc agc atc tac gtg ggc							1251
147	Thr Ser Asn Met Pro Val Ala Ala Arg Glu Ala Ser Ile Tyr Val Gly							
148		400		405		410		
150	gtg acc atc gcc gag tac ttc cgc gac cag ggc ttc tcc gtg gcc ctc							1299
151	Val Thr Ile Ala Glu Tyr Phe Arg Asp Gln Gly Phe Ser Val Ala Leu							
152		415		420		425		
154	atg gcc gac tcc acg agc cgc tgg gcc gag gct ttg cgc gag atc tct							1347
155	Met Ala Asp Ser Thr Ser Arg Trp Ala Glu Ala Leu Arg Glu Ile Ser							
156		430		435		440		
158	agc cgc ctc gag gag atg ccc gcc gag gag ggc tac ccg ccc tac ctc							1395
159	Ser Arg Leu Glu Glu Met Pro Ala Glu Glu Gly Tyr Pro Pro Tyr Leu							
160	445		450		455		460	
162	gcc gcc agg ctc gcc gcc ttc tac gag cgg gcg ggc aag gtc atc acc							1443
163	Ala Ala Arg Leu Ala Ala Phe Tyr Glu Arg Ala Gly Lys Val Ile Thr							
164		465		470		475		
166	ctg ggc ggc gag gag ggg gcg gtg acc atc gtg ggg gcc gtc tcc ccg							1491
167	Leu Gly Gly Glu Glu Gly Ala Val Thr Ile Val Gly Ala Val Ser Pro							
168		480		485		490		
170	ccg ggc ggc gac atg tcc gag ccc gtg acc cag tcc acc ttg agg atc							1539
171	Pro Gly Gly Asp Met Ser Glu Pro Val Thr Gln Ser Thr Leu Arg Ile							
172		495		500		505		
174	gtg ggg gcc ttc tgg cgg ctt gac gcc tcc ctg gcc ttc cgc cgc cac							1587
175	Val Gly Ala Phe Trp Arg Leu Asp Ala Ser Leu Ala Phe Arg Arg His							
176		510		515		520		
178	ttc ccc gcc atc aac tgg aac ggc tcc tac agc ctc ttc acc tcc gcc							1635
179	Phe Pro Ala Ile Asn Trp Asn Gly Ser Tyr Ser Leu Phe Thr Ser Ala							
180	525		530		535		540	
182	ctt gac ccc tgg tac cgg gag aac gtg gcc gag gac tac ccc gag ctc							1683
183	Leu Asp Pro Trp Tyr Arg Glu Asn Val Ala Glu Asp Tyr Pro Glu Leu							
184		545		550		555		
186	cgc gac gcc atc tcc gag ctt ttg cag cgg gag gcg ggc ctc cag gag							1731
187	Arg Asp Ala Ile Ser Glu Leu Leu Gln Arg Glu Ala Gly Leu Gln Glu							
188		560		565		570		
190	atc gtc cag ctc gtg ggg ccg gac gcc ctc cag gac gcc gag cgc ctc							1779
191	Ile Val Gln Leu Val Gly Pro Asp Ala Leu Gln Asp Ala Glu Arg Leu							
192		575		580		585		

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194	gtc att gag gtg ggc cgg atc atc cgc gag gac ttc ctg cag cag aac	1827
195	Val Ile Glu Val Gly Arg Ile Ile Arg Glu Asp Phe Leu Gln Gln Asn	
196	590 595 600	
198	gcc tac cac gag gtg gac gcc tac tgc tcc atg aag aag gcc tac ggg	1875
199	Ala Tyr His Glu Val Asp Ala Tyr Cys Ser Met Lys Lys Ala Tyr Gly	
200	605 610 615 620	
202	atc atg aag atg atc ctc gcc ttc tac aag gag gcg gag gcg gcc atc	1923
203	Ile Met Lys Met Ile Leu Ala Phe Tyr Lys Glu Ala Glu Ala Ala Ile	
204	625 630 635	
206	aag cgg ggg gtt tcc ata gac gag atc ctg cag ctc ccc gtt ctg gag	1971
207	Lys Arg Gly Val Ser Ile Asp Glu Ile Leu Gln Leu Pro Val Leu Glu	
208	640 645 650	
210	cgc atc ggc cgc gcc cgc tac gtg agc gag gag gag ttc ccc gcc tac	2019
211	Arg Ile Gly Arg Ala Arg Tyr Val Ser Glu Glu Glu Phe Pro Ala Tyr	
212	655 660 665	
214	ttt gag gag gcc atg aag gag atc cag ggg gcc ttc aag gcc ctg gcc	2067
215	Phe Glu Glu Ala Met Lys Glu Ile Gln Gly Ala Phe Lys Ala Leu Ala	
216	670 675 680	
218	taaagggggga gag atg gac ctt ctg aag aag gag tac acg ggc atc acc	2116
219	Met Asp Leu Leu Lys Lys Glu Tyr Thr Gly Ile Thr	
220	685 690 695	
222	tac atc tcg ggg cct ctt ctc ttc gtg gag aac gcc aag gac ctg gcc	2164
223	Tyr Ile Ser Gly Pro Leu Leu Phe Val Glu Asn Ala Lys Asp Leu Ala	
224	700 705 710	
226	tac ggg gcc atc gtg gac atc aag gac ggc acg ggc cgg gtc cgc ggc	2212
227	Tyr Gly Ala Ile Val Asp Ile Lys Asp Gly Thr Gly Arg Val Arg Gly	
228	715 720 725	
230	ggc cag gtg att gag gtc tcc gag gag tac gcc gtc atc cag gtg ttt	2260
231	Gly Gln Val Ile Glu Val Ser Glu Glu Tyr Ala Val Ile Gln Val Phe	
232	730 735 740	
234	gag gaa acc act ggg ctg gac ctg gcc acg acc agc gtg agc ctg gtg	2308
235	Glu Glu Thr Thr Gly Leu Asp Leu Ala Thr Thr Ser Val Ser Leu Val	
236	745 750 755 760	
238	gag gac gtg gcc cgg ctt ggg gtc tcc aag gag atg ctg ggc cgc cgc	2356
239	Glu Asp Val Ala Arg Leu Gly Val Ser Lys Glu Met Leu Gly Arg Arg	
240	765 770 775	
242	ttc aac ggc atc ggc aag ccc ata gac ggc ctg ccg ccc atc acc ccg	2404
243	Phe Asn Gly Ile Gly Lys Pro Ile Asp Gly Leu Pro Pro Ile Thr Pro	
244	780 785 790	
246	gag aag cgg ctc ccc atc acc ggc ctt ccc tta aac ccc gtg gcc cgg	2452
247	Glu Lys Arg Leu Pro Ile Thr Gly Leu Pro Leu Asn Pro Val Ala Arg	
248	795 800 805	
250	agg aag ccg gag cag ttc atc cag acg ggc atc tcc acc att gac gtg	2500
251	Arg Lys Pro Glu Gln Phe Ile Gln Thr Gly Ile Ser Thr Ile Asp Val	
252	810 815 820	
254	atg aac acc ctg gtc cgg ggg cag aag ctt ccc atc ttc tcc ggc tcg	2548
255	Met Asn Thr Leu Val Arg Gly Gln Lys Leu Pro Ile Phe Ser Gly Ser	
256	825 830 835 840	
258	ggg ctt ccc gcc aac gag atc gcc gcc cag atc gcc cgc cag gcc acg	2596

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259 Gly Leu Pro Ala Asn Glu Ile Ala Ala Gln Ile Ala Arg Gln Ala Thr
260      845      850      855
262 gtg cgc ccc gac ctc tcc ggg gag ggg gag aag gag gag ccc ttc gcc 2644
263 Val Arg Pro Asp Leu Ser Gly Glu Gly Glu Lys Glu Glu Pro Phe Ala
264      860      865      870
266 gtg gtc ttc gcc gcc atg ggg atc acg cag cgg gag ctc tcc tac ttc 2692
267 Val Val Phe Ala Ala Met Gly Ile Thr Gln Arg Glu Leu Ser Tyr Phe
268      875      880      885
270 atc cag gag ttt gag cgc acc ggg gcc ctg agc cgc tcc gtc ctc ttc 2740
271 Ile Gln Glu Phe Glu Arg Thr Gly Ala Leu Ser Arg Ser Val Leu Phe
272      890      895      900
274 ctg aac aag gcg gac gac ccc acc att gag cgc atc ctc acc ccc cgc 2788
275 Leu Asn Lys Ala Asp Pro Thr Ile Glu Arg Ile Leu Thr Pro Arg
276 905      910      915      920
278 atg gcc ctc acc gtg gcc gag tac ctg gcc ttt gag cac gac tac cac 2836
279 Met Ala Leu Thr Val Ala Glu Tyr Leu Ala Phe Glu His Asp Tyr His
280      925      930      935
282 gtc ctc gtc atc ctc acg gac atg acc aac tac tgc gag gcc ttg cgg 2884
283 Val Leu Val Ile Leu Thr Asp Met Thr Asn Tyr Cys Glu Ala Leu Arg
284      940      945      950
286 gag atc ggg gcc gcc cgc gag gag atc ccg ggc cgc cgc ggt tac ccc 2932
287 Glu Ile Gly Ala Ala Arg Glu Glu Ile Pro Gly Arg Arg Gly Tyr Pro
288      955      960      965
290 ggc tac atg tac acc gac ctg gcc acc atc tac gag cgc gcc ggg gtg 2980
291 Gly Tyr Met Tyr Thr Asp Leu Ala Thr Ile Tyr Glu Arg Ala Gly Val
292      970      975      980
294 gtg gag ggg aag aag ggg agc gtg acc cag atc ccc atc ctc tcc atg 3028
295 Val Glu Gly Lys Lys Gly Ser Val Thr Gln Ile Pro Ile Leu Ser Met
296 985      990      995      1000
298 ccc gac gac gac cgc acc cac ccc atc ccc gac ctc acg ggc tac atc 3076
299 Pro Asp Asp Asp Arg Thr His Pro Ile Pro Asp Leu Thr Gly Tyr Ile
300      1005      1010      1015
302 acc gag ggg cag atc cag ctc tcc cgg gag ctc cac cgc aag ggc atc 3124
303 Thr Glu Gly Gln Ile Gln Leu Ser Arg Glu Leu His Arg Lys Gly Ile
304      1020      1025      1030
306 tac ccg ccc att gac ccc ttg ccc tcc ctc tcc cgg ctc atg aac aac 3172
307 Tyr Pro Pro Ile Asp Pro Leu Pro Ser Leu Ser Arg Leu Met Asn Asn
308      1035      1040      1045
310 ggc gtg ggc aag ggc aag acc cgg gag gac cac aag cag gtc tcc gac 3220
311 Gly Val Gly Lys Gly Lys Thr Arg Glu Asp His Lys Gln Val Ser Asp
312      1050      1055      1060
314 cag ctc tac tcc gcc tac gcc aac ggg gtg gac atc cgg aag ctc gtg 3268
315 Gln Leu Tyr Ser Ala Tyr Ala Asn Gly Val Asp Ile Arg Lys Leu Val
316 1065      1070      1075      1080
318 gcc atc atc ggc gag gac gcc ctc acg gag aac gac cgc cgt tac ctc 3316
319 Ala Ile Ile Gly Glu Asp Ala Leu Thr Glu Asn Asp Arg Arg Tyr Leu
320      1085      1090      1095
322 cag ttc gcc gac gcc ttt gaa cgg ttc ttc atc aac cag ggg cag cag 3364
323 Gln Phe Ala Asp Ala Phe Glu Arg Phe Phe Ile Asn Gln Gly Gln Gln

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